

REMARKS

Claims 2-21 are presently pending in this application. Claim 1 and 22-27 have been canceled. Claim 5 was held to present allowable subject matter, and thus has been rewritten in independent form to include the subject matter of the respective base claim. Claims 2-4 and 6-11 have been amended to depend from rewritten claim 5.

The status of the application in light of the Office Action mailed 16 December 2004 is as follows:

(A) The Examiner requested affirmation of the 12 December 2004 telephonic election made in response to a Restriction Requirement issued by the Examiner.

(B) Claims 1-4, 7-13, and 16-21 were rejected under 35 USC § 102(b) as being anticipated by published US Patent Application No. 09/848,533, Publication No. 2002/0007790 ("Park").

(C) Claims 5, 6, 14, and 15 have been held as being allowable if rewritten in independent form.

A. Affirmation of Election in Response to Restriction Requirement

In response to the Restriction Requirement issued under 35 USC § 121, the applicant elected to prosecute claims 1-21 (Group I) and cancel claims 22-27 (Group II) during a telephone conference on 12 December 2004 between the Examiner and the applicant. The applicant confirms this election with the understanding that the Examiner and the U.S. Patent and Trademark Office are now bound to the finding of non-obviousness between each of the species. Accordingly, claims 22-27 have been canceled without prejudice to pursuing these claims in a continuation, divisional, continuation-in-part, or other application.

B. Response to Section 102(b) Rejection

1. Claims 1-4 and 7-11

Claims 1-4 and 7-11 were rejected under 35 USC § 102(b) over Park. The rejection of claim 1 is now moot because this claim has been canceled from the application. Claims 2-4 and 7-11 are allowable because these claims have been amended to depend from an allowable base claim. More specifically, claim 5 has been rewritten in independent form because it was held to be allowable, and claims 2-4 and 7-11 have been amended to depend from claim 5. Therefore, for at least this reason, the rejection of claims 2-4 and 6-11 over Park should be withdrawn.

2. Claims 12-13 and 16-21

Claims 12-13, and 16-21 were rejected under 35 USC § 102(b) over Park. As described below, the rejection of claims 12-21 should be withdrawn because Park does not disclose or suggest all of the features of these claims.

(a) Claim 12 is Directed to a Method for Processing Microfeature Workpieces

Claim 12 is directed at a method for processing microfeature workpieces, including cleaning an inner surface of a process chamber, and after the cleaning but prior to depositing material on a first microfeature workpiece, depositing a coating on the cleaned surface of the process chamber by contemporaneously introducing a gaseous first precursor and a gaseous second precursor to the process chamber to deposit a first reaction product at a first deposition rate. The method further includes positioning the first microfeature workpiece in the process chamber after depositing the coating. After positioning the first microfeature workpiece, the method still further includes depositing a second reaction product on a surface of the microfeature workpiece at a second rate lower than the first rate by depositing a precursor layer of the first precursor at least one monolayer thick and exposing the precursor layer to the second precursor to form a nanolayer reaction product.

(b) Park Discloses a Precoating Process for a Reactor and a Process for Depositing a Thin Film on a Surface of a Wafer

Park discloses a precoating process that is performed without a wafer in the reactor using two steps (paragraphs 92-95). The first step consists of mixing a flow-controlled TiCl_4 gas and an Ar gas and spraying the combination onto a wafer block and then excluding the TiCl_4 gas for a period of time (paragraphs 92-94). The second step consists of mixing an NH_3 gas and a flow-controlled Ar gas and spraying the combination toward the edges of the wafer block and then excluding the NH_3 gas for a period of time (paragraphs 92-94). In Park, the first and second steps are alternately repeated (paragraph 94) or the first step is repeated while the NH_3 and Ar gases are continuously introduced.

The thin film deposition process disclosed in Park is similar to the precoating process, except that there is a wafer in the reactor during the precoating process (paragraph 95). The wafer coating process in Park deposits a thin TiN film on a wafer by alternately introducing a TiCl_4 gas and an NH_3 gas into a reactor (paragraph 65). Park further describes the process as (a) introducing a TiCl_4 gas with an Ar gas and then excluding the TiCl_4 gas for a predetermined period of time, and alternately (b) introducing an NH_3 gas and an Ar gas and then excluding the NH_3 gas for a predetermined period of time to continuously grow a thin film on a wafer (paragraphs 65-68).

(c) Park Fails to Disclose, Among Other Features, Depositing a First Reaction Product on a Surface of a Process Chamber at a First Rate and Depositing a Second Reaction Product on a Surface of a Microfeature Workpiece at a Second Rate Lower Than the First Rate

Park fails to disclose or suggest the combination of elements set forth in claim 12. For example, Park does not disclose a method for processing microfeature workpieces that includes depositing a coating on the cleaned surface of a process chamber by contemporaneously introducing a gaseous first precursor and a gaseous second precursor to the process chamber to deposit a first reaction product at a first deposition rate and depositing a second reaction product on a surface of the

microfeature workpiece at a second rate lower than the first rate. Although Park provides flow rates for the TiCl_4 gas, the Ar gas mixed with the TiCl_4 gas, the NH_3 gas, and the Ar gas mixed with the NH_3 gas during the wafer coating process (paragraph 72), Park does not disclose a rate of growth of the thin film on the wafer. Additionally, Park does not disclose the flow rates of the TiCl_4 , NH_3 , and Ar during the precoating process and does not disclose the deposition rate of the precoating on the wafer block during the precoating process. Accordingly, Park does not disclose depositing a first reaction product on a surface of a process chamber at a first deposition rate and depositing a second reaction product on a surface of a microfeature workpiece at a second rate, which is lower than the first rate.

Park also does not inherently disclose that the precoating step has a higher deposition rate than the wafer coating step. The applicant respectfully disagrees with the Examiner's statement that "the claims requiring the precoating step have a higher deposition rate...is inherent because [in Park] the ammonia reactant is continuously flowed during the precoating step and only pulsed during the wafer coating step." Park does not support this conclusion because this reference does not address the deposition rate of the thin film on the wafer or the deposition rate of the precoating on the wafer block. The deposition rate can be influenced by many variables, such as the flow rate of the gases, the frequency of application of each gases, the temperature of the surface, the temperature of the gases, the concentration of the reactants, and the composition of the surface upon which the reactant product is being deposited. Although Park discloses gas flow rates during the wafer coating step, this reference does not disclose the flow rate of the gases during the precoating process. Park is also silent regarding the frequency of application of each gas in each process, the composition of the surface being coated during the precoating process, or the composition of the wafer that is being coated during the wafer coating process. Accordingly, the conclusion that Park discloses a higher deposition rate during the precoating step than during the wafer coating step is not necessarily true, and thus this is not an "inherent" feature of Park. Claims 12-13 and 16-21 are accordingly in condition for allowance.

C. Allowable Subject Matter

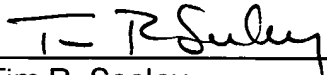
The undersigned thanks the Examiner for holding claims 5, 6, 14, and 15 as being allowable if rewritten in independent form. As discussed above, Claim 5 has been rewritten in independent form and, for at least that reason, is in condition for allowance. Claim 6 has been amended to depend from claim 5 and, for at least this reason, is also in condition for allowance. Claims 14 and 15 depend from independent claim 12, which as discussed above is also in condition for allowance. Accordingly, for at least this reason, claims 14 and 15 are in condition for allowance without being rewritten in independent form.

In view of the foregoing, the claims pending comply with 35 U.S.C. § 112 and are patentable over the applied art. The applicant accordingly requests reconsideration of the application and a Notice of Allowance. If the Examiner has any questions or believes a telephone conference would expedite prosecution of this application, the Examiner is encouraged to call the undersigned at (206) 359-6477.

No fees are believed due with this communication. However, the Commissioner is hereby authorized and requested to charge any deficiency in fees herein to Deposit Account No. 50-0665.

Respectfully submitted,
Perkins Coie LLP

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